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Original Articles.

MALIGNANCY AND RADIATION. A STUDY OF THE RELATION OF THE STRUCTURE OF CANCER TISSUE TO RADIATION.*

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THE study of malignancy and radiation is attended with extreme difficulties because neither subject is, as yet, completely understood. No man knows the cause of the former or the exactly accurate method of applying the latter. It is the purpose of this paper to present what has been learned about these baffling and mysterious subjects and tabulate what has been observed of the action of the roentgen ray and radium on malignant tissue.

Among the discoveries which made the 19th century forever famous, was the demonstration of uni-cellular existence and the fact that animal and plant life were made up of an aggregation of cells which resembled, with astonishing similarity, the uni-cellular amoeba. Thus the establishment of the fact that the ultimate subdivision or unit of life is a cell. This discovery shed a wonderful light upon scientific

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study; for if the essentials of life of the amoeba could be learned it would furnish a sure guide to the interpretation of all higher forms of life.

This cell was found to consist of a protoplasmic body and a darker round center called the nucleus. While at first great significance was attached to the former it finally appeared that the latter was the essentially important part of the life of the cell. It was found to be the heart or brain of the cell; that deprived of it the cell soon suffered death; that in it was centered the all important function of reproduction; that the nucleus alone was handed down to the next generation.

Experiments demonstrated the striking similarity between these uni-cellular forms of life and the individual cells of more highly developed animal life, not alone in appearance (microscopically), but when tested with various agents. For instance, when the amoeba was observed floating, under the microscope, the addition of various amounts of dilute chloroform would influence its activities and life much the same as it influences the human organism. Recently the amoeba has been tested with a variety of electric currents and the results obtained seem to apply, with striking exactness, to the individual cell, or the

* Read before the Worcester District Medical Society, Sept. 10, 1919.

malignant cell of higher forms of life. Slight currents caused the amoeba to cease moving for a period, while the daily divisions of the reproductive nucleus were checked or inhibited. A stronger current proportionately prolonged the dormant period, and if the current reached a certain degree of intensity, the amoeba never awakened and death ensued. These death changes of the cell take place in the nucleus—the heart—the brain—the vital center. When we come to consider the influence of radiation upon the cancer cell this parallel will strikingly appear.

Do we know anything about cancer? Has the past fifteen years of experimentation and study, assisted with abundant means and material, disclosed anything of value? The answer is decidedly in the affirmative. Many facts have been learned which add materially to its care and treatment and tend to place it in the list of somewhat preventable diseases.

We know that cancer has afflicted humanity from the earliest times. It is not a product of modern civilization although its increase has kept pace with it.

We know that cancer is neither hereditary, infectious, nor communicable. This fact is not only of value in obtaining insurance, but it renders the cancer victim less an object of danger. When it is known that his malady is harmless, he is better nursed and cared for.

We know that cancer is, at first, a local, or at least, a regional disease. This is valuable information for it assures us that if the cancer is thoroughly removed surgically in this incipient stage, a cure can reasonably be expected. This is the text of the sermon which the American Society for the Control of Cancer is endeavoring to preach all over our land; to influence people to seek aid very early while relief is possible; to dispel from their minds the fatalistic delusion of certain doom; to persuade physicians to act as promptly as in appendiceal inflammation; to impress physicians and patient alike that it is *delay* that kills.

We believe that cancer is caused by a chronic stimulative irritation, constant or intermittent, traumatic or chemical, perceptible or imperceptible, acting on a normal body cell. Mallory, in referring to this belief, states: "The exact manner in which the cancer arises has not been

fully determined, but it seems to be due, not to direct stimulation of the epithelium, but to injury done the connective tissue and the blood vessels, as a result of which, excessive regenerative efforts on the part of the epithelium are called forth."¹⁵ The importance of this belief will be at once apparent, not only as an incentive and a clue to the detection of more and more of these causative irritations, but as a prophylactic measure; for with the intelligent removal of the sources of these irritations, the cancer will be prevented from developing. In this preventative work the dentist as well as the physician, must act an important part.*

We know that the period of greatest susceptibility or the so-called cancer zone is from forty-five on. This is the age of hypernutrition and lessened bodily activity, especially among the more civilized people. This gives the suggestion that there may be something wrong with our modern ways of living, which ministers to the ravages of this baneful disease.[†]

We know that in each anatomical locality cancer differs in rapidity of growth and in its tendency to metastasis; that each such locality has its own natural cancer history; that in each instance it must be considered almost as a separate and distinct disease; that the mode of treatment must differ; and that widely different results from treatment must be expected.

We know, as has been noted, that every higher organism begins from a single cell; that this cell proliferates by division, and produces three layers designated epiblast, mesoblast, and hypoblast; that these in turn, multiply and differentiate into types of cells fitting their future functions; that each variety possesses more or less definite characteristics; that there are, in all, fifteen distinct varieties of cells giving rise to tumors which grow at various rates of speed.⁵ In whatever variety of tissue the causative irritation exerts its influence, from this source, and from this type, the evil cells multiply.

So much for our knowledge of malignancy. Now what observations have been made of the action of radiation on cancer tissue? In attempting to answer this question the writer will combine, in a composite way, his own limited

* "Cancer of the Mouth." BOSTON MEDICAL AND SURGICAL JOURNAL, Oct. 9, 1919.

† "The Cancer Problem," BOSTON MEDICAL AND SURGICAL JOURNAL, Sept. 22, 1919.

observations with those of the leading American, English, and French radiopathologists, illustrating the same with four sections of an epithelioma of the cervix uteri in which the



FIG. 1.

retrogressive processes are followed by a series of successive biopsies.

Figure 1* represents "metatypical pavement epithelioma" before undergoing radiation.

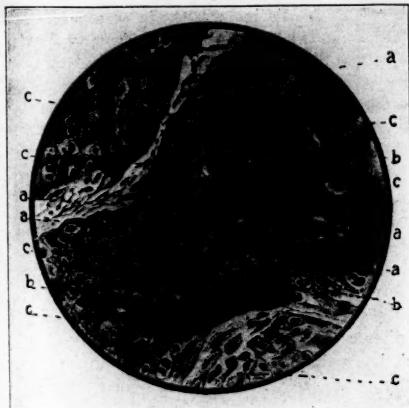


FIG. 2.

Figure 2 represents a fragment of this same epithelioma removed ten days after the first ap-

* Figs. 1 to 4 are reproductions of the work of Degrais and Bellot of the Biological Radium Laboratory of Paris and the descriptions are largely reproduced from their writings.

plication of radium. Some of the cells have not yet undergone any transformation, others appear to have been practically destroyed by the rays, and already exhibit signs of necrosis. While it will be noted that the entire cell is hypertrophied the chief disaster is sustained by the nucleus, as in the experiments on the amoeba. Some of these nuclei are enormous, irregular, budding, hyperchromatic, and some hypochromatic. An atypical mitosis is noted at times, when a greatly hypertrophied pro-

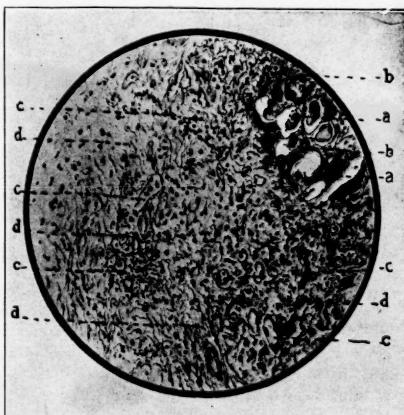


FIG. 3.

toplasm will seem studded with rapidly dividing nuclei. It is an abnormal development which shortens the life of the cell. This observation the writer has termed an abortion of the cell.

Figure 3 represents the same epithelioma from a biopsy made on the twenty-ninth day. In the upper right hand corner may be noted chromatic substance of the nucleus dispersed into the cytoplasm. Note also a group of hypertrophied cells at a very advanced stage of necrosis. They are in a stage of karyolysis and cytosis, and are surrounded and infiltrated by numerous young and polynuclear cells which after breaking up and disintegrating them will accomplish their phagocytic function. The median zone shows the process of disintegration at the stage nearest to cicatrization. There is a substantial reticulum rich in elements originating from the hyperplastic and rejuvenated

stroma of the tumor, cells of the lympho-connective tissue type, young fibroblasts and plasma cells, the evolution and organization of which will gradually result in definite cicatrization.

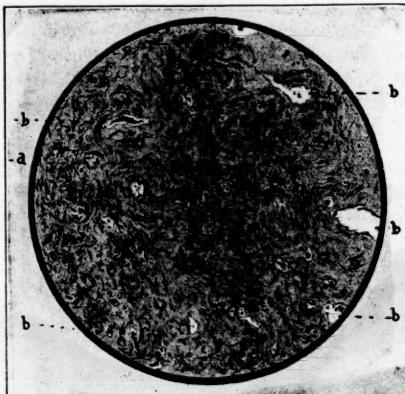


FIG. 4.

Figure 4 represents a biopsy made at the site of the cervical cicatrix three months after the first application of radium. The hypoplastic stroma seen in the previous section has given way to fairly dense connective tissue, rich in cellular elements. A few stellate connective tissue cells and some capillaries of recent formation are found in the midst of the new benign tissue but no trace of the former malignant cells can be found. In other words, the rapidly growing malignant epithelioma has, under the influence of radiation, completely retrogressed into dense connective tissue.¹⁰

This stimulation of connective tissue formation, it has been claimed, presses out or shuts off the cancer cells by constricting bands. This position can hardly be maintained; for the first changes are noted, as in the amoeba, in the cell itself or more accurately in the nucleus of the cell. The connective tissue appears later. The writer holds the view that radiation acts upon the newly forming cells which are of an embryonic type and therefore weaklings, less hardy than normal cells; that at the same time it exerts a destructive influence upon the fresh sources of blood supply which partake of the same immature nature; that while connective tissue proliferation is undoubtedly stimulated to some extent, its chief advent is in response

to nature's call for repair processes to replace the destroyed cells.

Such, in a general way, is the accepted view of the action of radiation on morbid tissue, provided the malignant mass is rich in cellular elements and rapidly procreating; that the source of radiation can be brought into adequate contact; and that its intensity is wisely regulated. Unfortunately, this is not the whole story, for many perils and misgivings beset the path of the radiotherapist in his attempt to bring about the utter destruction of the malignant lesion.

"It is one thing to know that radiations have a differential effect on cancer tissue, and an entirely different thing to turn it to account successfully."¹⁴ We have noted that radiation quickly inhibits the propagating power of the evil cell and if the degree of intensity be sufficient, destruction of the cell follows, but if insufficient the cell may remain inactive for a period of varying duration and revive to activity. Again, if the radiation is over sufficient the surrounding normal tissue may be broken down and nature's repair and resistant properties retarded or destroyed.

"It has become more and more apparent that successful use of radium in cancer requires careful consideration of each particular type of the disease in each organ as separate problems, in which different methods must be devised and different results expected."¹⁴ It is well recognized that some tumors require much more radiation to accomplish their destruction than others. In the obstinate class may be named the chondromas and the various osteogenic growths. It is known also that sarcomatous growths are more quickly and readily affected than carcinomatous. The basal celled epitheliomas of the skin are, of all growths, most easily acted upon. The fact that they do not form metastases renders it possible to reach quickly and completely the ultimate limits of the disease. The squamous celled variety is much less vulnerable. There appears to be a similar relationship in the forms of carcinoma of the cervix.

"Certain epidermoid carcinomas of the cervix are composed of small cells consisting chiefly of nuclei, with scanty cytoplasm, and growing in plexiform cords. These correspond to the slow-growing and non-metastasizing basal celled cancers of the skin and are wonderfully suscepti-

ble to radiation. The other variety resembles more closely the squamous celled type and tends much more rapidly to infiltrate and is less susceptible to radiative treatment.¹⁷ The same rule applies to carcinoma of the vagina and in fact is capable of pretty general application.

Cancer of the rectum may be classified as adenocarcinoma of the rectal mucosa, and the epidermoid carcinoma of the anal region. The former show a greater susceptibility to radiotherapy. The inguinal lymphatics are the most usual route of extension. With the exception of the tongue, this is the most unsatisfactory region for results.

Epidermoid carcinoma of the tongue is most hopeless to treat, both from mechanical difficulties and the fact that rich metastatic opportunities give it easy transit to the lymphatics of the neck. While this variety of cancer is very malignant and one of the most obstinate to retrogress, yet it can be destroyed with from one-quarter to one-half the amount of radiative intensity required fully to prostrate normal squamous epithelial cells. But in the case of the tongue the difficulty comes in applying the radium to point contact and controlling the rapid extension.

Nor are these variations of type and locality the only handicaps. The condition of the tissue surrounding the malignant area must be taken into serious consideration. It must be able to react with an exudation of leucocytes and to produce healthy granulation tissue. This is influenced by age, vitality, habits, and concurrent diseases. The tubercular and syphilitic are not favorable subjects for radiation. Every factor which reduces bodily vigor or resistance speeds on the invasion.

The age of the growth is another important consideration, for the older it is the less likely it is to submit to treatment, for the cancer cells have long since ceased to execute the reproductive process. In the radiation of these aged and self-limiting lesions there is grave danger of breaking down nature's feeble yet sufficient resistance and thereby give aid rather than battle to the old but comparatively harmless lesion.

An infection of the tumor tissue, under treatment, is a complication much to be dreaded. This process has the disastrous tendency of extending rapidly along the ramifications of the cancer path. The foul stench of septic dis-

charge of necrotic tissue and the symptoms of intense and prostrating bacterial intoxication may entirely change the clinical picture.⁷ This condition is made worse by continued radiation.

With these facts concerning the nature of cancer and its treatment by radiation before us, what deductions can reasonably be drawn for the guidance of the surgeon that he may know wherein its advantages attain, that he may add it to his kit as one more instrument of value?

It has been shown that radiation, acting upon the nucleus, inhibits the reproductive function of the malignant cell. Therefore, in operable cases, its use is advised just prior to the operation to render the tumor less malignant. This radiation should include all possible lines of metastasis to catch any glands already invaded and on beyond to reach the innocent lymphatics that they may become sclerosed and thereby rendered obstructive to any further invasion. This is a very necessary safeguard as no one can positively foretell in a given case, in just which direction extension will occur. It is also eminently necessary, for it is an admitted fact, that this extension is always well beyond the area where it can be seen or felt.

After the malignant mass has been thoroughly removed, the radiations are again advised, at stated intervals, to accomplish the destruction of any scattering cancer cells which may have been left. "Surgical treatment of malignant tumors is never complete unless it is combined with radiotherapy to destroy the small islands of cancer tissue which may have been left behind."¹⁸ It has been learned that if one evil cell is left unremoved it will continue to multiply as did the original tumor cell till another tumor mass is produced. Such a failure hastens rather than delays the malignant process, for a local has been converted into a general disaster. We believe that this procedure, in operable cases, will result in lessening the number of recurrences, and greatly add to the permanence of surgical work.

For inoperable cases, the radiations are advised to prolong life, lessen pain, to check hemorrhage and nauseous discharges. In a small percentage (seven) it has reclaimed the case to operability or permanent relief. It will be noted that this method does not advocate one

less operation. It seeks to aid and not to displace surgery.

Thus far we have made no distinction between the similar forms of radiation. The writer firmly believes in combining both agencies in a routine way and would not feel justified in attempting to treat malignancy if he could not avail himself of both forms, for each has its own appropriate application. It is a sound policy, in the present state of our knowledge, to combine the two agents whenever possible.¹¹ "Mastery of all forms of radiation is the first essential in the treatment of the various forms of malignancy. Each form has its place and has a decided advantage in its place."¹² Tumors which have not been influenced by one form have been removed by the other. Radium is admirably fitted and is far superior for treating the cavities of the body or when used in a needle form or in glass emanation tubes of actually piercing, at regular intervals, the mass itself so that a powerful concentrated action of the rays is obtained. Radium possesses the ability of producing a greater degree of reaction without injuring permanently the surrounding tissues. The roentgen ray is more adapted to the covering of large surface areas, including the mass or the scar of the wound, the metastases and the lymphatic distributions.

The most important factor in treating cancer, in any locality, is the control of the extensions. While radium acts with powerful local effect from a purely point contact, and while it is the more penetrating of the two, it is not suited to the more vital requirement of checking the general progress of the growth. "For this reason deep roentgen therapy applied externally and added to the radium internally gives a great advantage."¹¹ The roentgen ray should not be discredited for its failure to control malignant processes in the past, for there has been a decided advance in its therapeutic technic. With the powerful modern transformers and the Coolidge tube, much more penetrating, massive, and accurately measured doses can be obtained. "The roentgen ray has been found to be the only agent which is capable of checking and permanently curing well established malignant growths in which extensive involvement has taken place."¹³ Metastases of recent growth can be destroyed by the roentgen ray although they may be considerable distance from the skin sur-

face."¹⁰ It is therefore important that before we treat the local condition a search be made for the secondary deposits.¹¹ We believe that the most trustworthy agent for this critical accomplishment is the deep roentgen ray. The operator must repeatedly treat extensive areas unmindful of the longevity of his tube or his transformer. Radiotherapists are bending every energy to the perfection of the technic of these two radiative remedies, confident that the future will reveal better things.

We have discussed what is known about cancer and its ways. We have indicated the action of radiation upon the various cells. We have also expressed our conviction in the wisely selected combination of these radiative agencies as the handmaid of surgery. Let us all therefore hopefully coöperate and combine all we know, all that has been learned, all the remedies that have any potentiality; teaching the people these things that they may know the truth about the cancer evil; that they may suspect its early whispering symptoms; that they may have full confidence in us and quickly trust themselves to our care; that this dread disease, the most deadly enemy of our art, may be placed where it belongs among the somewhat preventable and somewhat curable diseases; that it may not always prevail so completely and disastrously against us.

In conclusion, it is encouraging to note that, as a result of these teachings, already people afflicted with cancer are presenting themselves earlier than heretofore to our large clinics. One need only to have attended the last annual meeting of The American Medical Association or note the medical literature for the past year and a half to realize that a wave of radiation popularity is sweeping over the American medical profession. More and more physicians and surgeons are advising its use both before and after operations and as a palliative measure. Radiations, of one or the other variety, solve many knotty problems, in a restricted way, in well selected cases, in almost every department of our art.* Better and better results, as technic improves, are reaching us from all over the world. Recently, Janeway, in a most studied and monumental discussion of the use of radium in cancer of the cervix, concludes that in this vicinity these radiations destroy

* "Radiotherapy," BOSTON MEDICAL AND SURGICAL JOURNAL, Aug. 28, 1919.

the diseased tissue to a greater distance than the knife is capable of removing it. "Every effort should therefore be made to secure its general use throughout the country."

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DISCUSSION.

DR. EDWARD REYNOLDS, Boston: In my judgment, the progress of radiology has been delayed many years and its credit severely injured in the opinion of the profession by the extravagant claims which have been made for it by some of its advocates. During a somewhat extended participation in cancer meetings over pretty much the entire United States I have almost uniformly found myself devoting the time which I could give to the consideration of radiology largely to attempts at refutation at what seemed to me unwarranted claims on its behalf. It is, I can assure you, a great pleasure to come to Worcester and to find myself at last in the position of having listened to an exposition of radiation by two gentlemen with whose views I, on the whole, find myself in quite complete accord.

The surgical opinion of the country divides cancer (and I wish throughout what I have to say to use the popular term cancer as an abbreviated form for—"The malignant diseases in their various manifestations") into two classes in its relation to radiation; first, certain superficial manifestations, mainly semi-malignant or slowly malignant diseases of the skin, in which the choice between radiation and the knife as a primary resort should be determined by the situation of the growth or ulceration and the amount of deformity which would result from operation. Where the situation permits wide and free excision of the growth by the knife without resultant deformity, operation is usually to be preferred; but in growths about the nose and eyes and eyelids, such as Drs. Bryant and Fields have exhibited on the screen here, radiation is often to be preferred; because of the lesser deformity which attends its use, and because in this superficial and slowly extending growths it has a high percentage of radical relief, we may even say cure, although that is a word which, like these two radiologists, I dislike to use in this connection.

The second class, from the standpoint of the use of radiation, embraces all the other situa-

tions in which malignant disease appears. In this wider field, as they have said, radiation should never be chosen as a primary resort or in the hope of permanent relief; but in speaking of this section I again find myself in most active accord with these two gentlemen to the effect that our duty towards denying that radium or radiology in any form is a cure for cancer, should not lead us to fail, as has been so often the case, in emphasizing the fact that it is perhaps the best of all our weapons for palliation, and the relief of suffering in hopeless and inoperable cases; nor, what is, perhaps, the probability that its use after operation in early cases will prove to decrease the percentage of recurrence. The most recent procedure in radiology, brief use of radiation in heavy dosage as a preliminary to operation, we must, I think, regard as still *sub judice*. Its use is founded on theory and has not yet been submitted to the test of time.

It is, I must repeat, important that we should in every discussion insist upon the often surprisingly great relief which radium offers to the sufferer from recurrent or otherwise inoperable cancer. In regions other than the external surface it is not always efficient even in palliation, but there are many cases in which it yields to those unfortunate individuals not only a great decrease of suffering, but sometimes prolongation of life in comparative, and occasionally surprisingly great comfort in exchange for a brief period of misery without it; moreover, with the return of comparative comfort the sufferer obtains a degree of hope and cheer which is of inestimable value, even though he may know at bottom that a final recovery is not to be hoped for. To insist upon the value of radiation as a palliative is really quite as important as our other duty to reiterate that it has so far proved a failure in affording radical relief except in the milder forms of cancer of the external surface.

To revert to the subject which is more especially mine we must certainly admit that after all the time, effort and money which have been spent in cancer research, our exact scientific knowledge of the nature of the disease is still incomplete, but all this work has not been wasted. We have certainly made very great advances in our knowledge of the natural history of the disease and in our power of controlling it.

In the first place, we have established certain negatives which are of the utmost importance. Cancer is not a bacterial disease, it is not the result of a parasite, it is not contagious nor communicable.

It is not hereditary. It is barely possible that there may occasionally be certain strains of descent in the human race which have less resistance to the disease than the average, but even this is not proved and perhaps not probable; in fact, the whole weight of evidence is

that it is in no sense heritable. Of those who attain the age of forty, one in eleven individuals dies of cancer; one woman in every eight; one man in every fourteen. Under these conditions, it is evident that there will be many families which will have had repeated instances of the disease that do not need an invocation to heredity to explain their association in one line of descent. On the average every individual who can remember eleven adult relatives will have had one case of cancer in his family.

So much for the negative. Now for the positive facts which we have recently learned. We know now that the process known as cancer consists essentially in an undue activity, an accelerated and altered growth, of the tissue cells of any spot in the body. We know that this undue activity and acceleration of growth is usually the result of the application of a long continued chronic irritation to this spot. We cannot help suspecting that cancer is always the result of such a stimulation to the growth and vital activities of the cells at a given spot, but it is not yet safe for us to make such a statement. We can only say that this is usually the fact.

There are numerous instances in which continued observation and records of cases have made this fact so patent that ordinary common sense proclaims its truth. Take the instance of Kangri cancer in Thibet. The inhabitants of Thibet have a habit of life which exists nowhere else in the world. It is their habit to wear inside their outer clothing and against the surface of the abdomen a contrivance known as the Kangri basket, which is in effect a small stove which is intended to keep the individual warm in their severe climate and which incidentally applies continuously a somewhat intense localized heat to the abdominal skin. This habit is peculiar to Thibet, and in Thibet squamous celled cancer of the skin of the abdomen at the point where the Kangri basket rests is an extremely common affection. It is unknown anywhere else in the world.

In certain localities in the East, cancer of the oesophagus, which is exceedingly rare over the rest of the world, is extremely prevalent among men, and is one of their common diseases; but it is extremely rare, and is indeed almost unknown, among women. In these localities the staple diet of the population consists of boiled rice eaten either alone or with other food. Both sexes ordinarily eat boiled rice three times a day. The men eat it scalding hot, so hot that no untrained gullet can endure it; the men are afflicted very commonly with cancer of the oesophagus. The women, who eat at a second table, *i.e.*, who eat the rice which the men leave and consequently eat it cool, are free from the disease.

One of the most common of all cancers over almost the entire world is cancer of the female

breast, and of this the most common form is an adeno-carcinoma of the milk ducts. We now know that this is ordinarily preceded by cystic dilatation of a duct, or ducts, usually by inspissated secretion (there is of course a constant small and unnoticeable secretion from these glands throughout life). Of course the distention of such duct, the necessity for constant absorption of fluid to prevent increase of distention, and the presence in contact with its mucous membrane of the concentrated, inspissated residue furnishes a long continued chemical irritation or stimulation of the cells of this mucous membrane. This furnishes a bio-chemical or physiological, long-continued stimulation of the breast cells, precisely as the heat of the Kangri basket offers a physical stimulation to the cells of the abdominal skin.

Not to multiply instances we may revert to the all important point which underlies our whole present view of cancer,—that we believe that the development of malignant tissue is, at least usually, the product of a long-continued stimulation of the tissue cells at that point.

Perhaps the most common, certainly among the most common, of these so-called pre-cancerous conditions are the mechanical and perhaps bio-chemical stimulations which result from the presence of benign new growths or ulcerations. Most of the benign new growths, and most long continued chronic ulcerations, may at times result in the production of malignant tissue within or about them; and the percentage of such growths or ulcerations which result in malignancy varies both with the varying anatomical character of the mass or ulcer, and, more especially, with the situation in the human body which they occupy. This brings us to a second very important principle. The natural history of cancer varies essentially not only with the varying histological characteristics of the individual neoplasm but quite as much in accordance with the situation in which that neoplasm appears.

We must regard cancers of each of the many organs of the body as being clinically almost different diseases, *i.e.*, the natural history of the disease, the degree of its malignancy, the rapidity of its progress, its method of extension, the time at which this extension occurs, and consequently its prognosis, its susceptibility to treatment at any given stage of its growth; in other words, its curability varies perhaps more with its site than with any other single factor in the situation. We must learn the diagnosis, natural history, and methods of treatment separately and individually for cancer of each organ and situation in the body.

Now, then, to the practical results of all this, to a consideration of our capacity for affording relief.

We must admit at the outset that in established cancer in any situation the prospect of

permanent cure is very poor and is confined to the earliest stages. After metastasis has once occurred the most radical operation seldom yields more than at best a period of relief before recurrence occurs. When the disease is detected before actual metastasis a thorough radical operation such as would be performed on an advanced case does yield in many situations a reasonable percentage of radical and permanent cure. This application of extensive radical operation to the earliest stages is the chief advance which has been made in the treatment of established malignant disease.

On the other hand, we have made a great advance by recognition of the fact that the application of operative or other treatments, often of a trifling nature, to the benign conditions, mainly neoplasms or ulcerations, which we now group as pre-cancerous, offers an assured prevention of the development of this disastrous disease.

This is an enormous practical advance in the management of the disease and with it the duty of a practitioner towards his patients has been radically changed. He must recognize now and for the future that the classical diagnosis of cancer is, in fact, merely the diagnosis of the established and too usually incurable stage. He is not now justified in waiting for the appearance of the symptoms and signs on which this diagnosis is founded, but must familiarize himself with the symptoms and signs of the pre-cancerous stage in each of the many localities in which malignant disease occurs; and, unless he is himself a surgeon, should send every such case to a competent surgeon as soon as it is seen and without delay. It is true that only a percentage of these benign conditions develop cancer and that not all of them need be operated upon at once, but there are many cases which an extremely brief delay will put into the class of established cancer, and therefore the responsibility for delay is very heavy and is one which should be taken only by the most competent authority available.

We recognize that the habit of submitting all benign new growths or persistent ulcerations to excision or active treatment will yield a certain number of minor operations which might have been, in the end, avoided; but we believe that the performance of a reasonable excess of trifling but finally successful excisions is justified by the resulting avoidance of a large number of extensive, mutilating, and too often merely palliative radical operations.

The time available in a brief résumé of the subject must prevent any attempt at a statement of the diagnostic signs of the pre-cancerous stage in each of the many situations in which these appear, but there are four situations in which the disease occurs so much more frequently than elsewhere as to constitute a great majority of all cases, and these four may be briefly referred to.

Cancer of the Digestive Organs, properly, cancer of the stomach, colon, and rectum, should be described separately, but it may suffice here to say that any definite loss of blood from the rectum is highly suspicious and should lead to a physical examination which, unless definite hemorrhoids are found or if the cure of these fails to relieve the hemorrhage, should include an immediate proctoscopic examination; and that bloody vomitus or persistent indigestion which resists treatment and especially if it is attended by loss of weight or change of color, should be regarded as highly suspicious of malignant disease, and should lead to an immediate examination without delay by all the methods available, including analysis of the stomach contents and feces and the use of the bismuth x-ray.

In cancer of the digestive organs the diagnosis of the pre-cancerous stage is difficult, and the operations for its relief are not trifling, though far less severe than those required by the established disease. This situation is therefore that in which the prospect of control of the disease is least good and in which we must expect a lesser decrease of mortality in the future than in any of the others; yet even here early and complete physical examination should yield a considerable decrease in the fatalities.

Cancer of the Breast is almost wholly peculiar to women. In this situation metastasis occurs very soon after the establishment of the disease, but the appearance of malignant cells is usually preceded by a long continued pre-cancerous stage. The situation of the pre-cancerous mass renders it easy of diagnosis and the operation for its removal is very trivial, hence this is perhaps of all others the situation for which we may expect the greatest decrease in the occurrence of the disease under modern treatment. Present opinion demands that all nodules in the breast which have persisted for a month should be regarded as suspicious and that unless a competent authority can show reason to the contrary they should be removed without delay. The excision of such a benign nodule puts the patient's arm in a sling for a few days, results in no deformity, and should never be followed by recurrence. The specimen should be submitted to immediate examination if possible before the conclusion of the operation and if malignant tissue is found an extensive radical operation with the excision of all the axillary and subclavial glands should be performed at the same sitting. In the breast, peculiarly, the performance of the radical operation a few days later and after submission of the specimen to a pathologist at a distance leads to a great increase in the number of recurrences even in the earliest stages of the established disease.

Cancer of the Uterus occurs in two quite distinct forms. Squamous celled cancer of the cervix extends early through the lymphatics

and is an extremely active and progressive form of the disease in which radical cure is rarely effected by even the most extensive operations after malignant tissue is once present. It is, however, preceded by a very long pre-cancerous stage of simple chronic ulceration which is susceptible of a radical cure, sometimes by minor treatment and always by a plastic operation such as trachelorrhaphy or amputation. Its leading symptom is a persistent, usually slightly offensive, leucorrhea in a woman approaching or over forty. Every such case should be treated. If the leucorrhea is tinged with blood or if bleeding follows any mechanical interference with the cervix the condition is of the utmost importance.

Cancer of the body of the uterus is of a slower type with late metastasis. Its leading symptom is increased catamenial flowing in a woman approaching or over forty; or, more suggestive still, intermenstrual bleeding; and if the intermenstrual flowing is merely serous or serosanguinous it is almost pathognomonic, no matter how small its quantity may be.

The general popular impression that increased flowing at the time of the menopause is normal, is to be expected and is unimportant, has perhaps cost more lives than any other false impression of medicine. This is in fact the period in life when flowing should invariably decrease. Increased flowing is not always or necessarily the result of malignant disease, but is never normal. It is always the result of some abnormality in the organ and it always demands prompt and thorough examination. This cannot be too strongly insisted upon.

The treatment is curetting with submission of the curettings to a pathologist, and hysterectomy at the same sitting if adenoma or adenocarcinoma is found. If the pathological examination is negative but the flowing recurs the curettage should be promptly repeated, since the actual malignant process is frequently limited to a very small spot in the uterus and may easily have been missed by the curette.

Cancer of the Skin. This form of the disease has been somewhat fully covered by the discussion already and it may suffice to say of it that any persistent crack or ulceration of the surface, especially if near one of the orifices of the body, should be regarded as potentially pre-cancerous and disposed of by minor or operative measures rather than endured. Warts, moles, or birthmarks which enlarge or change color during middle life are usually pre-cancerous and should be immediately treated by the appropriate means.

The American Society for the Control of Cancer has published a monograph on the diagnosis of the cancerous and pre-cancerous stages in all of the many situations in which they occur, which the Massachusetts Health Commissioner is about to distribute to every practitioner in the State. This pamphlet was pre-

pared by a committee of experts, was subsequently revised with great care by the Council of the Control Society, a body composed of surgeons and pathologists from all over the country, and may be regarded as the most authoritative statement of present opinion on the subject of cancer which is now in existence. As I was not a member of the committee which produced it, I may perhaps be permitted to express my opinion that it is a most satisfactory, clear, and concise production. You will receive it shortly from the State Commissioner and I think that you should not only read it but should keep it on your desk for constant reference and guidance, as I myself shall certainly feel compelled to do. Few men, even of those of us who are especially interested, can carry in their heads every sign and symptom of all the less common varieties of this multiform disease.

CAESAREAN SECTION.

BY NATHANIEL W. EMERSON, A.M., M.D., F.A.C.S.,
BOSTON.

SOME adverse criticism having been made of an article published by me last year upon this same subject has led me to choose this topic again, hoping thereby a full discussion will be provoked. Further experience only emphasizes all the claims made in the former article, and leads to more positive claims for this operation as well as a wider range for its application. I believe it is the greatest single advance made in civil surgery within recent years. The improvement in the technique in a very short time has carried it almost to perfection, and could reliable statistics be compiled showing the actual saving of life both of mother and child, they would be astounding. To this, if we add the enormous saving of traumatic mutilation, with the subsequent dangers and discomforts of repair, the credit side of this operation is almost incomprehensible. It seems to me that the status of the operation at the present time is very similar to that of the operation for appendicitis before the latter operation was accepted by the profession. Nothing is more vivid in our mind than the constant reiteration of the indications not only of appendicitis but for the operation of the same, and the slow winning of the profession as a whole to the acceptance of the fact that the cure for appendicitis was removal of the appendix. Very few are foolish enough to question this today.

When we look back and consider what were the obstetrical teachings and practice of men contem-

porary with myself, and compare them with the brilliancy of the results of the Caesarean operation in competent hands, the mind can hardly attune itself to comprehend the old procedure. Think what it meant to keep in one's armamentarium the craniotome and cranioclast and what it meant to use them. The deliberate sacrificing of the child *in utero*, and the horrible, brutal means of extracting the child, seem today as if they should hark back to the very darkest of all ages, and yet within the memory of no end of men living they were the accepted procedure of the day. The use of these must mean not only the deliberate destruction of the child but almost without exception the deliberate mutilation of the mother and too often fatal results for both. As performed today Caesarean section is one of the most finished of operations. The technique is so simple and rapid and definite that it is without an element of danger in itself, adding nothing to the complications which one is facing. It is such a sure life-saver for the mother,—and if the child is viable, for the child,—and is so beneficent to the woman not only in relieving her of pain which would otherwise be long-protracted, but in otherwise preventing mutilations which are too often accompanying, that I feel sure if the profession would realize just what the operation accomplishes, it would be universally accepted under conditions which would otherwise call for some operative procedure. The safety of the operation in competent hands has been definitely demonstrated under most astounding conditions. Also it will often save a child where the loss of the mother is inevitable and where otherwise the child would be lost also.

The indications, so far as my own observations are instructive to me, are herewith somewhat formulated. A wider experience will no doubt add to these indications in ways which will be generally acceptable, but these are drawn from my own limited experience.

Contracted pelvis has always caused difficulties and often prevented normal labor. If left to nature labor is long and tremendously protracted, with the suffering incident to the mother and with more or less danger to the child from the delay in moulding the head. The alternative has been forceps, which only add to the difficulties because, of course, the forceps in themselves take up some room in coming through the pelvis. Probably some form of

contraction of the pelvis is perhaps the most common cause for the application of high forceps.

Albuminuria and its sequelae, where it is definitely due to the pregnancy and where it has proceeded so that the life of both mother and child are menaced, calls for a termination of the pregnancy, and this can be done so quickly and definitely by a Caesarean that I believe it will be the accepted method of the future.

For puerperal convulsions nothing can compare with this method.

In cases of placenta praevia all other methods should be discarded. Whenever a diagnosis can be made of placenta praevia, no matter what the placement of the placenta, either lateral or central, no other method than a Caesarean should be considered for its relief. The method so long accepted of turning the child and forcibly delivering, by compression controlling the hemorrhage, is simply a last ditch resort, because heretofore we had no other means of offering any form of relief. The danger from a placenta praevia is from a hemorrhage which cannot be controlled by the methods heretofore in use. It is a mechanical condition and the only thing abnormal about it is the location of the placenta whereby it becomes obstructive and must be dislodged more or less before the child can be delivered. If the child can by any method be extracted the uterus automatically takes care of itself without reference to where the placenta may be attached. Therefore, it would seem without possibility of controversy that, in a case of placenta praevia when recognized, the removal of the child, both before the mother is exhausted and before the child is affected, would be not only the most mechanical method but would also be the most commonsense one. As an actual fact, in this operation the location of the placenta is absolutely immaterial. I have several times found it so placed that I have completely separated it from the uterus before removing the fetus and while the hemorrhage was momentarily severe, because the uterus could not contract itself. The removal of the child was immediately followed by a contraction of the uterus and the hemorrhage controlled. Therefore, in any case of placenta praevia the surest method of controlling hemorrhage is by developing conditions whereby the uterus can contract itself, and this is more quickly and safely done by opening the

uterus and removing the child than by any other method devised, and probably better than by any other method which will ever be devised.

Certain cases which are classed under the heads of inertia and atony of the uterus, which to me are rather vague terms, are also better dealt with by Caesarean than by any other method.

Cases of malposition, from whatever cause, are more definitely and safely managed by this method than by any other.

Postoperative intraabdominal complications due to adhesions from some previous operation which was faulty can be dealt with successfully only by a Caesarean operation. Any operation preceding a pregnancy which fixes the uterus in the abdominal cavity, or which prevents its free, untrammeled development, establishes conditions which are fatal to the child unless saved by an abdominal section. One of the three fatal cases in this report died because of the difficulties left over from a former operation. The child was saved but the mother was unable to survive.

An experience which will be more definitely related later, leads me to add certain rare cases where the inability of the labor to proceed is inexplicable, which would be better dealt with by Caesarean than by any other method.

Cases of pregnancy complicated by a fibroid require a hysterectomy. The only chance for the child is to conduct the pregnancy beyond the viable age if possible, and then make a Caesarean to save the child, followed by a hysterectomy. The Caesarean in no way complicates the subsequent procedure.

In many of the conditions above noted the first recourse has been the high forceps operation, noted here only to condemn it. I believe the day is approaching when the high forceps, and especially the axis-traction forceps, will be thrown on the scrap heap. The high forceps is unmechanical, most destructive of the life of the child, almost invariably mutilates the mother, and is a brutal method of overcoming the difficult situation. The exhaustion of the mother cannot be ignored, nor the danger of the life as well as the mutilation of the child. It is usually a tedious performance and if it is hurried and unnecessary force used, it almost invariably means greater laceration for the mother.

With a Caesarean section in view, a certain few precautions should be rigidly undertaken. First, no unnecessary vaginal examinations should be made and when made they should be under the most rigid aseptic conditions. Before the operation the vagina should be thoroughly aseptized.

Also, particular attention should be given when the operation is undertaken, before labor has begun, to see that there is some dilatation of the cervix. Then, of course, every aseptic precaution should be taken as in every abdominal section.

Probably the greatest danger lies in sepsis, and this danger is greater because there are so many ways it can enter a case through negligence of others than the operator. In every case in my own experience sepsis looms up greater to me than any one factor of danger. One of the fatal cases in this report was due to sepsis, the cause of which I do not know as I was not associated with the case. The danger from sepsis cannot be too strongly emphasized. In every case some sort of examination must be made, of course, to determine the nature of the case, and if possible what is complicating it. There is no reason, however, in repeated futile vaginal examinations which do not immediately result in definite conclusions. One should accustom himself to learn by one single examination all that a case requires for its final determination. This examination should be made under complete asepsis, as indeed should every examination under such circumstances, even if delivery is to be left to nature. Repeated examinations which result in no definite action are signs of incompetency. If an operation is decided upon the vagina should be most thoroughly cleansed and as carefully made aseptic as if a hysterectomy were in contemplation. If a Caesarean is decided upon the same rigid precautions should be undertaken as in any other case where the abdomen is to be opened. I am wholly convinced that in these cases where sepsis supervenes upon the operation it is wholly due to the fault in the technique and could have been avoided.

Aside from this, it seems to me the greatest dangers are from delays of one kind or another; at least my observation leads me to this conclusion. If one hesitates under any given condition until a woman is absolutely exhausted, the danger, of course, is very acute, exactly as

it is in a case of appendicitis, neglected until death threatens. In such cases as these the operation only too often fails. Therefore, when there are such difficulties that delay is causing exhaustion, nothing is to be gained by waiting one hour or twenty-four hours before facing the situation which is hourly growing more menacing.

Recently one of my associates lost a case on the table, the third of those recorded in this report, because the woman was so exhausted from hemorrhage that she could not survive the operation. The operation was undertaken only when it was seen that the woman was going to die unless something was done. This was a case of placenta praevia which should have been operated the moment the diagnosis was made. At least some interference should have been undertaken at that time and if a Caesarean was finally to be done it should have been employed at the beginning. My associate was not called into consultation until more than twenty-four hours were allowed to drift by with a constant hemorrhage accumulative in its ill effects and her condition had become desperate. This was a needless failure.

A recent case was so unusually peculiar that it is worthy of record. Asked to see a woman in her first pregnancy at full term we found a healthy woman with a competent pelvis who had been in labor thirty-six hours without engaging the head in the upper straights. Pains were regular and normal in every way so far as one could judge, coming from three to five minutes apart and as strong as one could wish, yet the head floated. It made no effort to engage itself. The woman was becoming exhausted and upon examination I could find no reason why this condition of affairs should prevail and I at once advised an operation. This was refused at first, but after a delay of several hours with no progress it was accepted. The operation found everything normal except the incomprehensible entanglement of the child with the cord. The latter wound from the umbilicus around the body to the left side behind, through the axilla, then turned upward and backward from the shoulder across the back of the neck to the opposite side where it proceeded downward and forward through the axilla and backward to the placenta. This occupied practically all of the slack of the cord and really hung the child *in utero* to the placenta in such a way

that the head could not engage. The only alternative to this operation was a high forceps and if the forceps had successfully engaged the head and brought it down I cannot conceive how delivery could then have taken place unless the cord was divided or else the placenta stripped from its uterine attachment. In either case the delay in extracting the child would probably have been sufficient to cause its loss and if the placenta had been separated with the child *in utero* before it was extracted I do not see how a very severe hemorrhage could have been avoided. At any rate a Caesarean relieved the situation in a very few moments and mother and child did finely.

Another most satisfactory case was one of marked albuminuria. The patient was in competent hands and closely watched. Shortly after rising one morning she complained of headache and faulty vision, and more rapidly than I have ever observed before she lost sight and consciousness. By noon time she was helpless and her condition serious. A Caesarean at mid-afternoon interrupted all unfavorable symptoms, saved a beautiful baby, and the mother improved at once and made a fine recovery.

The time consumed in the operation is something of a factor in its success. After the initial incision everything should go on smoothly and efficiently to the end, and it will be a very rare and complicated case which cannot be completed in half an hour. The average time consumed should be not over 25 minutes.

The following summary takes the place of one published with a former article on this same subject and includes all of the cases therein listed with the addition of those which have occurred since that was published. It must be distinctly understood that these cases were not all performed by myself. They include all of the cases I have ever done together with all the cases that have been done in our hospital up to the present time by whomsoever they were operated. This should make more convincing and interesting whatever claims are made for the operation. It does not mean the summary of cases by some individual who has attained exceptional cleverness. Some of the cases were done by operators who are not especially competent abdominal operators. To our mind this means that the operation is a safe one and the technique is so simple that the man of ordinary surgical abil-

ity and training can make himself competent to undertake it. To undertake it, however, he must make himself absolutely competent in his operative technique to avoid sepsis. The danger from the occasional operator is that he does not sufficiently keep in mind all the time the danger of infection. It is only when one has had sufficient experience to know that every time the abdominal cavity is opened a possibility of infection is also offered requiring the most absolutely rigid compliance with every detail of operative technique to protect the patient.

When every possible precaution has been undertaken by the most competent operators there will be then failures from infection from sources so insidious that they cannot be foreseen and therefore forestalled, nor can they be detected afterwards. I know of no widely experienced abdominal operator who has not met with his inexplicable failures. Therefore, it is most incumbent that he who operates on cases as serious as those under discussion should observe every possible precaution to avoid infection through the operation.

SUMMARY OF CASES.

DIAGNOSIS	OPERATION	No. OF CASES	No. OF OPER.		DIED	REMARKS
			CURED	DEAD		
Albuminuria	Caesarean section	6	6	6		One foetus a monstrosity
Breech presentation	"	4	4	4		
Cicatricial contraction of cervix uteri	"	1	1	1		
Contracted pelvis	"	33	33	33		
Double vagina	"	2	2	2		
Dystocia	"	30	30	30		
Dystocia; hydramnios	"	1	1	1		Foetus a monstrosity
Eclampsia	"	8	8	8		
Epilepsy	"	1	1	1		
Foetus dead	"	4	4	4		5 m., 5½ m., 7½ m., 9 m.
Hernia, vent. p. o.	"	1	1	1		
Metrorrhagia gravidarum	"	1	1	1		
Mitral insufficiency; exhaustion	"	1	1	1		
Myomata uteri	Caesarean section, hysterectomy	1	1	1		
Myomata uteri	Caesarean section, myomectomy	1	1	1		
Ocicpito-posterior position	Caesarean section	2	2	2		
Piamenta praevia	"	6	6	4	2	
Post-operative adhesions	"	1	1	0	1	
Spondylitis	"	1	1	1		
Suspension in utero of foetus by cord	"	1	1	1		
Toxaemia	"	3	3	3		
Transverse presentation	"	2	2	2		
Uterine inertia	"	9	9	9		
TOTAL		120	120	117	3	

Total number of cases, 120; total number of deaths, 3; death rate, 2½%.

THE NEXT STEP IN THE CAMPAIGN
FOR INFANT WELFARE. THE EDU-
CATION OF THE WOMEN OF THE NA-
TION FOR MOTHERHOOD.

BY ISAAC W. BREWER, M.D.,

Health Officer, Watertown, N. Y.

It has always seemed to me that the infant welfare campaign begins too late in the life of the child. The welfare stations receive children up to the age of two years and teach the mother how to care for the child. However, very few mothers apply to the stations until the health of the child has already been

injured and it needs rebuilding. In other words, the mother is taught to care for her child at its expense. The ideal for which we should strive is an efficient course in the care of the child to be an integral part of the education of every woman. It is far more important for the nation that a woman should be proficient in the care of her child than that she should have a knowledge of many of the subjects taught in the public schools. Much as this is to be desired, it is doubtful if the necessary instruction can be added to the school course for some years to come. It therefore seems that we should as a substitute do the

best we can with the material at hand. The various infant welfare stations throughout the country are short of help, and what would be more natural than that they should become teaching centers by receiving a limited number of young women as helpers, who, while helping, would gain a practical knowledge of the care of a child. This plan would be of the greatest advantage to the community, in many ways.

First of all, it would bring the welfare stations into close contact with many persons who now know but little about them and at a time when these persons are in a frame of mind when they can absorb the teachings of the station.

In the second place, it would create in those thus employed a civic responsibility, a most desirable thing at this time. But most of all, it would teach the possible mother how to care for the child which she may reasonably expect to be hers and at the same time she would be assisting some other mother with her burden.

The teaching should be systematic and besides the work at the station should include a certain amount of study or a number of lectures on the physiology of the infant and on the prevention of those diseases which are common amongst the children during the first two years of life. Toward the end of the course the responsibility of the individual should be developed by field work with the visiting nurse. The pupil should be taught to go into the home and instruct the mother in the preparation of the child's food and in other problems which will be met.

It is very apparent that such a course will greatly benefit the nation. It will create a large number of women who have had practical experience with the problems of infancy and they will be able to avoid those errors which are all too common in the average home.

Do we need this education amongst women? Hear what Dr. Charles J. Hastings, President of the American Public Health Association, had to say in 1918: "Unfortunately, the knowledge that we possess in regard to preventable diseases and the ways and means by which they can be controlled has been for the most part kept within the precincts of health depart-

ments, universities, laboratories, and so on. It has never been translated as thoroughly as it should have been into a form that the man on the street and the woman in the humblest home could understand. . . . There is not a woman in our land who is not fond of her baby, and who would not probably jeopardize her life for that baby. Is it likely that she is going to willingly sacrifice it? No. Nine times out of ten it is the result of ignorance; it is the result of lack of proper knowledge on her part."

Possibly some of the readers will feel that conditions in their community are very satisfactory, but they are not. The infant mortality in this country is greatly in excess of what it should be. In New Zealand the infant mortality is much lower than in any city in the United States. Until we have reached her rate we cannot feel that all is well with us. In fact an infant mortality of 25 per thousand is higher than it should be in an enlightened community where proper educational and preventive measures obtain.

Book Reviews.

The Early Treatment of War Wounds. By COLONEL H. M. W. GRAY, C.B., C.M.G., M.B., (Aberdeen), F.R.C.S. Ed. Consultant in Special Military Surgery, late Consultant Surgeon, British Expeditionary Force, France. London: Henry Frowde, Oxford University Press; Hodder & Stoughton, Warwick Square, E.C. 1919.

A small volume of 300 pages admirably printed and bound, and illustrated by a few good pictures.

Lt.-General T. H. J. C. Goodwin, C.B., C.M.G., Director-General of the Army Medical Service, has written a "Foreword" which we quote in full:

"The experience of our military authorities in the present war has been that, for long periods, it was not possible to carry out any 'war movement.' Our armies were obliged—though not content—to hold their own against greatly superior odds.

"As regards military surgery during the first two years of the war, we were encountering

unfamiliar conditions, acquiring new experiences, and dealing with wounds of a nature, and on a scale, hitherto undreamed of.

"It was perhaps inevitable that advances should at first be somewhat slow. During the last year or two affairs appear to have progressed more rapidly and satisfactorily, and great improvements have been made in many directions. The early treatment of wounds, the prevention and treatment of shock and collapse, the operative procedures in all types of injury, and many other problems, have received close attention with the result that the advance in these and many other matters has been very marked.

"Thousands of limbs and lives are now saved which, at the commencement of the war, would have been regarded as irretrievably lost.

"Our views on many questions and problems have changed, are still changing, and no doubt will become still further advanced in the future. It is very important that the present situation as regards advances in military surgery should be clearly and definitely set forward and published in concise form, in order that every surgeon throughout our various areas of war may become fully acquainted with the methods at present in vogue.

"Under the conditions of life which now obtain, the Army surgeon has not such full opportunities for study as might be desired, and this small handbook by Colonel Gray, giving the valuable experiences of himself and other workers, should prove of immense assistance."

Note the sentence, "Our views on many questions and problems have changed, are still changing, and no doubt will become still further advanced in the future"; this from a high authority is a powerful argument for a small manual rather than a large system of war surgery, at the present time.

The author, Colonel Gray, served for three and a half years as Consultant Surgeon in France. The responsibility was placed on him of ensuring "that the standard of surgical work in the Army should be as high as possible". This little book is a record of the methods adopted to maintain the highest standard. Colonel Gray has been assisted by several other men who have seen all sorts of military service.

The subject of abdominal wounds has been omitted: Colonel Gray thinks that the experience of a good abdominal surgeon in time of peace is a sufficient preparation for the work of war.

He emphasizes repeatedly the fact that even an approach to ideal conditions rarely can be

attained by the army surgeon in time of action.

There are eleven chapters: Surgical Treatment of Wounded Men at Advanced Units; Work at a Casualty Clearing Station; The Treatment of Wound Shock; Considerations Regarding The Use of Different Kinds of Antiseptics and Dressings; Principles of Treatment of Gunshot Wounds at Casualty Clearing Stations; Operative Treatment of War Wounds; Wounds of the Brain and its Coverings; Penetrating Wounds of the Thorax; Injuries of the Spinal Cord; Compound Fracture of the Femur; Wounds of Joints. Particular attention is directed to the chapter on "Wounds of the Thorax."

The book is recommended to all progressive surgeons.

Pye's Surgical Handicraft: A Manual of Surgical Manipulations, Minor Surgery, and other Matters Connected With the Work of House Surgeons and Surgical Dressers. Edited and largely rewritten by W. H. CLAYTON-GREENE, B.A., M.B., B. C. (Camb.), F.R.C.S. (Eng.). Surgeon to St. Mary's Hospital; Lecturer on Surgery in the Medical School, etc. Eighth edition: fully revised, with some additional matter and illustrations. *Vel de minmis curat chirurgicus.* New York, William Wood and Company. 1919.

The first edition of this manual was published in 1884. Mr. Pye then "endeavored to describe the details of surgical work from the viewpoint of house surgeons and dressers in surgical wards;" in this same preface, now thirty-five years old, he emphasizes the fact that surgery when considered etymologically, is "a skilled labour, nor will surgeons ever cease to be handcraftsmen".

The present volume contains 600 well printed and well illustrated pages. Mr. Clayton-Green has "added much new matter and many new illustrations, and has taken advantages of the work of Sir Robert Jones in advising treatment for orthopedic cases."

The present volume is but slightly affected by "war surgery," which on the whole is not greatly to be regretted; for the lessons of war surgery are not yet plain nor can they be final until all data have been received and reviewed. The chapter on anesthesia is only fairly good: local anesthesia is given less than a page; less than half a page is devoted to transfusion of blood. But with these minor exceptions, the book is good, and is an admirable manual of the best English hospital practice.

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All letters containing business communications, or referring to the publication, subscription, or advertising department of the Journal, should be addressed to

BOSTON MEDICAL AND SURGICAL JOURNAL
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MATERNITY BENEFITS.

In another column is a report on Maternity Benefits to which attention is called.

Considerable discussion has taken place on this subject in the last few weeks among members of the medical profession. Active general discussions of this matter which concerns physicians intimately has unfortunately been delayed until a time when others interested in the same subject from a different angle have considered it for a long time and have reached more or less definite conclusions.

A similar delay in active discussion among physicians was observed in the matter of Industrial Accident Insurance. It is probable that the same thing will occur many times in the future when matters of social concern are brought before the Legislature, at first for discussion and later for action.

It is to the credit of physicians that they are so whole-heartedly devoted to their work that

they have little time for other considerations, but that very fact weakens their influence in the consideration of matters of general social importance, even though incidentally their personal and professional interests are affected. On strictly medical matters physicians have a right to be heard as physicians. On social questions they have a right to be heard as citizens who may or may not, through their training and study, speak with special authority.

Have we a right as physicians to a special hearing on maternity benefits? As to the general social question of the advisability of such a measure we have not, unless we feel that the welfare of our patients as a whole is threatened or unless we feel that such a measure will lower the standard of our profession. The probability that it will incidentally change the status of our profession gives us no special right to a hearing.

If the Legislature feels that the Commonwealth will benefit by such legislation as is proposed and if we cannot show that definite harm will come we can oppose the legislation as citizens but not as physicians. If the Legislature is to enact maternity benefit laws it is the duty of the medical profession to see to it that those laws are the best attainable.

This subject has been under general discussion for a number of years. It has been before the Legislature for several years. A year ago a bill providing for maternity benefits passed one branch of the Legislature but was defeated for financial reasons in the Committee on Ways and Means. In his inaugural address the Governor this year recommended legislation to provide maternity benefits. The State Department of Health is in favor of the general plan. The Joint Committee on Legislation of The Massachusetts Medical Society and The Massachusetts Homeopathic Medical Society have decided to stand by the State Department of Health. The President of The Massachusetts Medical Society has favored the general plan and endorsed a specific bill in an editorial article in the BOSTON MEDICAL AND SURGICAL JOURNAL. (Issue of January 29, 1920) It is the opinion of keen observers, though not of all, that some legislation will be enacted this year.

At this stage opposition to the entire plan has been voiced by certain medical organizations and district medical societies. The medical profession is obviously divided on the general social question. A majority perhaps is against the entire plan. It is opposed as socialistic. Can we

expect our protests against it on these grounds to be given special consideration? We may protest as citizens but if we expect to be heard as physicians must we not express opinions on medical and not on social questions? Are we not in danger of repeating the experience of Industrial Accident Insurance? We protested against legislation. Poor legislation was passed. We are still trying to amend it. And meantime few would advocate a return to the old system which we tried to keep, even if that were possible. Must we not content ourselves with the exercise of our rights as citizens of opposing all legislation, and as physicians is it not our duty to try, if laws are to be passed with reference to Maternity Benefits, to make them as safe and sane as possible?

It would seem that this latter duty is doubly incumbent on us because the merits of different proposed laws are already the subject of editorial comment in the daily press.

INFANT WELFARE STATIONS AND EDUCATION FOR MOTHERHOOD.

THE infant welfare stations have done and are doing excellent work in teaching mothers how to care for their children, but it is very apparent that we begin the education of the mother a little too late in the life of the child. Very few women apply to the stations until their child is sick, and not infrequently considerable damage is done before proper treatment is begun.

The ideal for which we must all strive is to have care of children form a part of the education of every mother. Such instruction is of far more importance to the nation than is much that is taught in the schools. However, it will be some time before child hygiene will become a part of the curriculum of the public schools. Until that time arrives we must find a substitute which will as a beginning focus attention on this most important subject.

This substitute is readily found in any city where there is an infant welfare station. These stations should offer courses in the care of children to young women, preferably those who have recently been married or those who are contemplating matrimony. The instruction should begin by helping weigh the children and by assisting about the station. Later, the pupil

should be taken out to see the cases in their homes, and in conjunction with this instruction she should be given practical talks on the various phases of infant welfare.

Not only will the pupils be better able to care for the children which come into their homes but the personal contact with the poorer mothers will create in them a sense of civic responsibility which is highly desirable at this time. He or she who knows and appreciates the problems and the limitations of his neighbor will be better able to cope with the nation's problems, for much of the faulty legislation is due to failure to see the other fellow's point of view.

A few years of instruction such as is outlined here will pave the way for other welfare stations which in connection with the school system will offer instruction in the welfare of children.

MASSACHUSETTS GENERAL HOSPITAL OUT-PATIENT MONTHLY MEETINGS.

BEGINNING with the New Year, the Out-Patient Staff of the Massachusetts General Hospital inaugurated a series of monthly meetings at which brief communications upon medical and surgical subjects are read by members of the Staff. The meetings are open to all doctors, medical students, nurses, and social workers. The papers will be presented by men who have made special study of the matter under discussion, but at the same time they will be written for an audience not especially familiar with the subject. It is hoped, therefore, that these meetings will serve not only to bring before the Staff the work of its members, but to present to such general practitioners as care to attend the latest opinions upon medical problems.

The meetings are held between the hours of twelve and one, in the out-patient amphitheatre. The date and program of each meeting will appear in the JOURNAL, and will be sent to any one requesting that his name be placed upon the mailing list.

The next meeting will be held on Friday, March 12th; the program will consist of five papers:

Some queer tumors	Dr. Torr W. Harmer
Goitre	Dr. Malcolm Seymour
Early diagnosis and present treatment of syphilis	Dr. Henry D. Lloyd

Surgical aspects of syphilis

Dr. W. P. Coues

Report of two cases of echinocoeus cyst of
the lung.

Dr. G. M. Balboni

Dr. G. W. Holmes



MEDICAL NOTES.

JOHNS HOPKINS HOSPITAL.—It has been stated that in the fire which occurred on January 12 in the pathological buildings and in the laboratory of Dr. William H. Welch, none of the valuable specimens was lost, nor were any of the records of research work damaged.

CHAIR OF GYNECOLOGY AT THE UNIVERSITY OF PENNSYLVANIA.—A gift of fifty thousand dollars has been made from the estate of William C. Godell for the establishment of a chair of gynecology in the medical school at the University of Pennsylvania.

TYPHUS AMONG RUSSIAN REFUGEES.—A recent report states that there has been a new outbreak of typhus among the thousands of Russian refugees gathered near Narva, one hundred miles west of Petrograd. More than two thousand cases are reported in that vicinity. The epidemic is complicated by the prevalence of influenza and dysentery. The total number of cases of the three diseases under the care of the American Red Cross is nearly fifteen thousand.

The Red Cross is mobilizing a large quantity of disinfectants and will receive 20 doctors from Paris, as there are only 30 Russian doctors in Narva. A mild form of typhus has been prevalent for some time, but the efforts to stamp it out were hindered by the shortage of medical supplies.

CONGRESS ON MEDICAL EDUCATION AND LICENSURE.—The annual Congress on Medical Education and Medical Licensure was held in the Florentine room of the Congress Hotel in Chicago on March 1, 2, and 3. It was held under the auspices of the Council on Medical Education of the American Medical Association of American Medical Colleges. The following was the program:

March 1: Addresses by Dr. Arthur Dean Bevan, Dr. George Blumer, Dr. David A.

Strickler, Dr. Ray Lyman Wilbur, Dr. Henry S. Pritchett, Dr. Harry P. Judson, Mr. Abraham Flexner; "Present Status of Medical Education," by Dr. N. P. Colwell; symposium on "The Needs and Future of Medical Education," Dr. George E. Vincent; "The Larger Function of State University Medical Schools," Dr. Walter A. Jessup; "Full-Time Teachers in Clinical Departments," Dr. William Darrach; "Research in Medical Schools, Laboratory Departments," Dr. Oskar Klotz; "Research in Medical Schools, Clinical Departments," Dr. G. Canby Robinson.

March 2: "Graduate Medical Instruction in the United States," Dr. Louis B. Wilson; "Interallied Medical Relations; Qualifying Examinations, Licensure, Examinations, Graduate Medical Instruction," Dr. Walter L. Bierring; "Essential Improvements in State Medical Licensure," Dr. John M. Baldy; "Interstate Relations in Medical Licensure," Francis W. Shepardson. At the afternoon session there were submitted Reports on Medical Teaching from the Committee on Medical Pedagogy of the Association of American Colleges. Dr. W. S. Carter delivered an address, and other physicians discussed various aspects of Anatomy, Histology, and Embryology, Physiology, and Biological Chemistry.

The session on March 3 was devoted to Pharmacology, Pathology, Bacteriology, Parasitology, and Public Health and Preventive Medicine.

INFLUENZA IN NEW YORK.—In New York the death rate for February 3 was 163 from influenza and 184 from pneumonia; new cases of influenza numbered 3629, with 580 new cases of pneumonia. On February 4 the number of deaths increased to 186 from influenza and 193 from pneumonia, the largest death rate since the outbreak of the epidemic; there were 3277 new cases of influenza, and 782 of pneumonia. Influenza cases of February 5 numbered 3126, with 152 deaths; there were 819 pneumonia cases, with 182 deaths. The report on February 8 showed a considerable decrease, with 1872 new cases of influenza, making a total of 58,442 cases during the epidemic up to that date. There were 513 cases of pneumonia, making a total of 12,032. Deaths from influenza since the beginning of the epidemic numbered 1755; from pneumonia, 3141.

INFLUENZA REPORTS.—Reports from foreign centers indicate the widespread epidemic of influenza. A report from Copenhagen on February 4 stated that two-thirds of the Copenhagen garrison and many officers, doctors, and nurses were ill with the disease. On February 8, it was reported that influenza was spreading in Japan. A report on February 14 mentioned 68 new cases in Honolulu, with two deaths. There were reported 119 new cases on the island of Oahu, and 52 on the island of Kauai.

EFFECT OF WAR ON MALNUTRITION OF CHILDREN IN ENGLAND.—Investigation of the health of Children in England during the war reveals the fact that their nutrition in general was bettered by war conditions. This is probably due in part to the fact that financially a large proportion of the families of the former working men and mill hands in England were improved; for instead of receiving what remained after the husband had spent Saturday evening at a taproom, the wife received regularly a certain proportion of his pay as a soldier, from a responsible agent. In addition, many women found employment in factories, thus increasing the family income. It is further true that much of the rationing of food had a beneficial effect; for in England, as in this country also, a considerable part of the family income is often expended on non-essential and even injurious foods. The examinations of school children showed that at the close of the war the ratio of undernourished children was less than half that in 1913, the year before the beginning of the war.

VENEREAL DISEASE CLINICS IN THE UNITED STATES.—The two hundred and fifty-three venereal disease clinics operating under the joint control of the United States Public Health Service and State boards of health, for the months of November and December, 1919, admitted 17,925 new cases, making a total of 52,343 under treatment. There were 236,036 treatments administered to the patients under the care of these clinics; 41,848 of these treatments were the administration of arsphenamine.

COOPERATION OF NATIONAL DENTAL ASSOCIATION IN VENEREAL DISEASE CONTROL.—The following resolution was unanimously adopted by the National Dental Association at its twenty-

third annual session held in New Orleans in October:

"Resolved, That the twenty-third annual convention of the National Dental Association of the United States, following the course already pursued by the advertising media, drugists, physicians, and the medical and allied colleges of the United States, hereby approves and indorses the propaganda for the control of the venereal diseases, undertaken by the United States Public Health Service, and hereby gives assurance that it will use its best endeavors not only to secure the interest and the co-operation of every member of the dental profession, but will also use its best endeavors to assist in the general plan outlined by the Public Health Service for the education of the civilian population in this vital subject."

NEED OF DOCTORS FOR SERVICE IN EASTERN EUROPE.—The following announcement has been made by the New England Division Headquarters of the American Red Cross:

"The American Red Cross has received a call for forty doctors whose services in general will be in the eastern part of Europe and will extend for a period of from six to nine months.

The Red Cross desires to get men who have just finished their internship at hospitals and enlist them as first lieutenants. The pay will be two hundred and twenty-five dollars (\$225.00) a month without maintenance but with travel expenses and living allowance in New York while awaiting sailing.

If men of wider experience than interns wish to consider this service, we plan to enlist them as captains with pay at two hundred and seventy-five dollars (\$275.00) a month.

For further information physicians may communicate with Dr. Paul W. Kimball, American Red Cross, 108 Massachusetts Ave., Boston, Mass.

A COURSE IN NURSING SERVICE IN INDUSTRY.—There is being offered during the second semester, from February to June, 1920, at the New York University, School of Commerce, Accounts, and Finance, a course in Standardization of Nursing Service in Industry. The course is arranged especially for industrial nurses, welfare workers, and those who contemplate entering the field of industrial welfare work. The course will include lectures and

group discussions of the latest industrial nursing methods, first-aid service, first-aid equipment, and prevention work in the industrial plant. The students will be given an opportunity to make special investigations of nursing problems in large industrial plants, with particular reference to administration and organization. Special consideration will be given to such topics as: Duties and responsibilities of the nurse in small and large industries, methods of teaching the worker and his family how to keep well, most approved methods required for follow-up health service, relation of the nurse to the industrial community, home nursing and personal hygiene, reducing labor turnover through health measures, and the amount of hospital care available for the worker.

RED CROSS DISASTER RELIEF.—In the relief of suffering which has followed in the wake of disasters throughout the country, local and national Red Cross funds to the approximate amount of \$421,000 were expended during the past year. The disasters reported resulted in a total number of six hundred and fifty deaths and eighteen hundred personal injuries: approximately fifty thousand persons were made homeless and a property loss of \$25,000,000 was entailed.

BOSTON AND MASSACHUSETTS.

WEEK'S DEATH RATE IN BOSTON.—During the week ending February 21, 1920, the number of deaths reported was 483 against 275 last year, with a rate of 31.16 against 18.01 last year. There were 81 deaths under one year of age against 45 last year.

The number of cases of principal reportable diseases were: Diphtheria, 49; scarlet fever, 77; measles, 264; whooping cough, 81; typhoid fever, 1; tuberculosis, 36.

Included in the above were the following cases of non-residents: Diphtheria, 20; scarlet fever, 13; whooping cough, 2; tuberculosis, 5. Total deaths from these diseases were: Diphtheria, 4; scarlet fever, 2; measles, 2; whooping cough, 12; tuberculosis, 25.

Included in the above were the following non-residents: Diphtheria, 3; scarlet fever, 2; whooping cough, 2; tuberculosis, 1.

Influenza cases, 760; influenza deaths, 106.

NEW ENGLAND NOTES.

INFLUENZA REPORTS.—A report from Providence, Rhode Island, on February 2 included 143 new cases of influenza, with 1 death from influenza and 2 from pneumonia. On February 3 the number of cases increased to 274, with 2 deaths from influenza and 5 from pneumonia. In Maine the reports have shown a continued increase, with 123 new cases reported on February 3.

WAR RELIEF FUNDS.—The New England Division of the American Committee for Devastated France has acknowledged contributions to the amount of \$186,997.27. Contributions to the New England branch of the Italian War Relief Fund have reached \$321,455.14.

Obituaries.

PHILIP COOMBS KNAPP, M.D.

PHILIP COOMBS KNAPP died February 23, 1920, at the Boston City Hospital, where he had served thirty-four years as visiting physician for diseases of the nervous system, the result of a final acute illness of several weeks duration due to cerebral thrombosis.

The son of Philip Coombs and Sarah Harriet Moore Knapp he was born at Lynn, Massachusetts, June 3, 1858. After attending the Lynn High School he entered Harvard College and graduated with the class of 1878, going on to the Harvard Medical School where he received the degrees of A.M. and M.D. in 1883, having served as house officer at the Boston City Hospital and at the Boston Lunatic Hospital before getting his diplomas. Dr. Knapp at once made a specialty of the diseases of the mind and nervous system, soon becoming known as one of the best read members of the profession in those departments. His clinical training, begun while a house officer, was advanced when in 1885 he became physician for diseases of the nervous system to out-patients at the Boston City Hospital. The following year and for a period of two years he held a similar office at the Boston Dispensary. From 1888 until 1913 he was clinical instructor in diseases of the nervous system at Harvard, teaching the students at his City Hospital Clinics, having been promoted to physician for dis-

eases of the nervous system in 1886, an office he held at the time of his death. The growth of the neurological department from an out-patient clinic to an active hospital service with beds in the wards was due in large measure to the persistent efforts through a long series of years of the senior physician, Dr. Knapp.

Of a scholarly turn of mind, Dr. Knapp acted as translator and editor of Strumpell's Text-book of Medicine in 1887, 1893, 1901, and for still another edition in 1911. He published "Pathology, Diagnosis and Treatment of Intra Cranial Growths" in 1891 and wrote the section on "Nervous Affections Following Railway and Allied Injuries" for Dereum's text-book on nervous diseases in 1895, the year he was elected president of the American Neurological Association. Other works embraced: "Feigned Diseases of the Mind and Nervous System" in Hamilton's System of Legal Medicine, 1894; "Traumatic Neurasthenia and Hysteria, 1897; "The Treatment of Cerebral Tumors," contributed to the BOSTON MEDICAL AND SURGICAL JOURNAL (1899), and another paper in the same publication (1900), "The Unity of the Acute Psychoses."

He served as a trustee and as secretary of the Boston Insane Hospital from 1897 to 1902 and was chairman of this board in 1902-3. Among other positions and memberships were: consulting physician to the Massachusetts State Hospital for Insane Criminals; president New England Society of Psychiatry, 1905-1908; fellow Royal Society of Medicine; member Neurological Society of the United Kingdom; Massachusetts Medico-Legal Society; American Institute of Criminal Law and Criminology; American Association of Medical Jurisprudence; Massachusetts Medical Society, and American Medical Association. His membership in both the American Neurological Association and in the Boston Society of Psychiatry and Neurology was active. He missed few meetings and generally took part in the discussions, speaking to the point in well chosen English. Only a few weeks before his death, when enfeebled by his brain lesion, he attended a meeting of the Boston Society of Psychiatry and Neurology and discussed two papers from the floor. For several years he had had premonitions of his coming end and had suffered partial paralysis of leg and arm. Nothing daunted he gave no indication that he noted any disability, fulfilled all of his regular duties, made

hospital visits, saw private patients and carried on his chosen lines of reading as in the past.

Dr. Knapp spent much time in court testifying as an expert witness in mental cases; as a diagnostician his reputation was extensive; he had a wide knowledge of current literature both in his specialty and in the domain of history and fiction; he read with ease German, French and Italian and got much from those languages.

In 1893 he married Mrs. Isabel Williams Stebbins of Springfield, who survived him. They had no children.

A native taciturnity leading to apparent indifference of manner concealed a warm hearted disposition and a loyalty in friendship that were recognized by his intimates. An omnivorous reader with a retentive memory, his mind was a storehouse of varied accurate information which was seldom volunteered but always cheerfully imparted in response to a question. This learned physician who did so much for neurology and psychiatry, filling an important place in the medical community, will be long remembered and sadly missed.

W. L. B.

MELVIN GEORGE OVERLOCK, M.D.

DR. MELVIN GEORGE OVERLOCK died of chronic nephritis in Worcester January 30, 1920, aged 54. Born in Appleton, Maine, August 24, 1865, he received his early education in the public schools of Maine.

Coming to Worcester at the age of 20, he pursued his trade as a barber, some years later becoming a student reader in the office of a local physician. In 1896 he received a medical degree from Baltimore Medical College. He took an active partisan interest in politics and was thus elected trustee-at-large of the Worcester City Hospital, a position which he held until the recent failure of the City Council to re-elect him. He was also given, in 1907, by the late Gov. Guild, appointments as Medical Inspector of the Southern Worcester Districts; but incidental to the reorganization of the State Health Department, he was dropped from the list of inspectors.

Dr. Overlock was a prolific writer for the public press on various matters pertaining to public health, notably on the subjects of tuberculosis. He embraced the Catholic faith some ten days prior to his decease. He is survived by a widow and a married daughter.

JULIUS STIMPSON CLARK, M.D.

DR. JULIUS S. CLARK, long a prominent physician in Melrose, died at his home there January 27, 1920, after prolonged illness which began with pneumonia. He was born in Bristol, Me., on March 23, 1838, the son of Dr. Albert S. and Ann Herbert Clark. He was educated in part in Yarmouth, Me., and was graduated from Auburn Academy in that State and from Waterville College. He later attended Georgetown University in Washington, D. C.

At the first call for volunteers for the Civil War, Dr. Clark enlisted and fought with the Fourth Maine Infantry and rose from private to captain and was brevetted major. His entire army service during the war and afterward covered a period of six years. Following this, he entered the United States Treasury Department in Washington, and while there continued and completed his medical studies at Georgetown, graduating M.D. in 1869.

From 1870 until 1878 he was health officer, police surgeon and city physician for Louisiana, and by his experiments he demonstrated to the authorities that yellow fever could be kept out of this country. While in New Orleans Dr. Clark was married, on November 10, 1873, to Eliza I. Venmand, of an old Southern family. It was not long after that they came North, to make their home in Melrose. His wife died several years ago, and the doctor is survived by a daughter, Mrs. Anita C. Warren, and two sons, Julius V. Clark and E. Greeley Clark, all of Melrose.

Dr. Clark was a member of Post 4, G. A. R., of Melrose and belonged to the Sons of Veterans, of which he was the oldest active member. He was also a member of the Massachusetts Medical Society, the Middlesex East District Society, which for some years he served as president, and of the Commandery of the State of Massachusetts, Military Order of the Loyal Legion of the United States. He was at the time of his death president of the medical board of the Melrose Hospital, and formerly was for many years medical examiner for pensions.

Miscellany.

REPORT OF THE JOINT COMMITTEE ON
LEGISLATION OF THE MASSACHUSETTS
MEDICAL SOCIETY AND THE MASSACHUSETTS
HOMEOPATHIC MEDICAL SOCIETY
ON MATERNITY BENEFITS.

THREE bills have been assigned for hearing before the Committees of the Legislature on Public Health and Social Welfare, sitting jointly. The Spencer bill, Senate 200, the Carey bill, House 306, and the Young bill, House 1174, are all to be considered.

The *Spencer bill* provides that any woman a resident of the Commonwealth for one year shall be entitled to maternity benefits "who presents to the Department of Public Health at least two months previous to her anticipated confinement" satisfactory evidence "that she is pregnant and who is found by said department to be without means of providing the ordinary and proper care for herself or infant, or both, during a reasonable period before or after childbirth without thereby depriving the other members of her immediate family of the ordinary necessities of life."

Other sections of the bill provide that the names of recipients of the benefits shall be kept secret, and that appeal to a special board may be made if benefits are denied, that fraud shall be punishable, and that the father of an illegitimate child shall reimburse the State if his identity can be established.

Provision is made that any money benefit, which cannot exceed twelve dollars a week, shall be paid directly to the mother, but that neither the status of a pauper nor the stigma of pauperism is to follow the receiving of cash benefits. The bill provides that the recipient of the benefits of the act "must accept such instructions in general hygiene and infant care as, in the judgment of the Department of Public Health the individual case demands and in the discretion of the Department of Public Health hospital care or home nursing or both medicine and medicinal care and such obstetrical care as may be necessary."

"The recipient, if remaining at home, shall be allowed in all cases to choose her own physician, subject to said physician's acceptance of the fee schedule for such cases to be fixed by the rules and regulations of the Department of Public Health."

The *Carey bill* is so similar to the *Spencer bill* that it need not be discussed further than to state that it mentions no period in advance of the expected date of confinement at which application must be made.

The *Young bill* is a much simpler measure. It provides that "any woman (a resident of the state for over one year) who is pregnant and who desires advice, instruction nursing or medical care for herself or infant shall be entitled to the benefits of this act, provided that she make application to the State Department of Public Health at least three months before the expected date of her confinement and provided that she accept and carry out such instructions in general hygiene and infant care," etc. (including hospital care), as in the *Spencer bill*. The *Young Bill* provides that the recipient of maternity care under the act if remaining at home shall be allowed to "choose her own physician subject to said physician's acceptance of the fee schedule for such cases, and other rules and regulations of the State Department of Public Health."

The act is declared to be a "public health measure and the maternity care granted under this act shall

WAR RELIEF FUND.—The New England Branch of the French Orphanage Fund has received contributions to a total amount of \$562,124.51. The Italian War Relief Fund, New England Branch, has acknowledged \$321,997.52.

be granted free of cost to all persons entitled thereto regardless of their financial condition."

There is no clause regarding illegitimacy in the Young bill this year.

There are several minor differences between the bills.

Both make possible receiving prenatal care. Experience has shown that adequate prenatal care is one of the main factors in improving obstetric conditions. The Young bill is an improvement on the Spencer bill in that it requires at least three months' instead of only two months' notice before confinement. The Young bill requires that any instructions given by the State Department of Health be carried out: the Spencer bill that they be accepted. These differences would probably be removed without objection by the advocates of the Spencer bill. The illegitimacy section in the Spencer bill is considered by competent legal authorities as practically impossible to enforce and as therefore unwise of enactment.

The radical differences between the bills are these: The Spencer bill imposes on the State Department of Public Health the duty of determining the financial condition of any applicant for benefits and the duty of dispensing financial assistance to applicants found worthy. The Young bill provides maternity benefits for all who apply. The State is to pay the physician and to provide the nursing. Direct financial aid is not to be given by the Department of Health. The functions of local and State Boards and Societies in the way of giving financial assistance are not in any way interfered with. But this extraneous duty is not placed upon the Department of Health by the Young bill. The Spencer bill provides no control whatever over the physician provided he agrees to accept the stated fee. The Young bill provides that the physician must agree to accept the fee and abide by such rules as the Department of Health may establish. In this clause lies the opportunity to bring about better conditions of obstetric practice. And likewise a new and tremendously important step is taken in imposing duties on the Department of Health. How far reaching these new duties may become it is impossible to tell.

In Boston the result is hardest to foretell. The large, well administered obstetric clinics and hospitals which are connected with the various medical schools provide excellent care for patients and give admirable instruction to advanced students. Any step which impairs the efficiency of the existing hospitals will be unfortunate from the standpoint of the community as a whole. Any serious interference with the efficiency of teaching obstetrics will be a calamity to the State.

For several years, at least, it is probable that patients in need of free obstetric and nursing care will continue to go to the established clinics. These may, however, be seriously rivalled by capable obstetricians willing to accept relatively small fees where payment is absolutely certain. In the large manufacturing cities where no obstetric clinics are established and where midwives are plenty there is reason to believe that, as time goes on, capable obstetricians, tempted by the certainty of the fees, will supplant the midwives.

In the smaller towns where there are few physicians and no midwives it is difficult to see how obstetric practice is to be changed materially for a number of years. It is hardly to be expected that a great many patients will apply for benefits. It is possible that the practice of securing free nursing from the State and of having the physicians' fees paid by the State will become general. If it does, the financial cost will be ruinous. The State Department of Health would have the power to control such abuse by cutting down the fees to such a point that no capable physician would accept them. Incidentally, any good accomplished by the bill would be automatically destroyed.

It seems probable that if the public takes advantage of the bill gradually the medical profession as a whole will benefit financially. The tendency will be little by little to concentrate obstetric practice in the hands of those best qualified for it. There will of necessity have to be created a board of consultants as there are now District Health Officers. Adequate hospital facilities in all portions of the State will necessarily have to be provided in time.

The status of the individual physician will change. The profession as a whole will probably be benefited. The State will probably gain by securing services of better obstetricians and more adequate nursing. The financial burden on the State may be great. The strain on the State Department of Health will test severely the broadmindedness, the executive ability, and fairness of the Commissioner and his associates.

If legislation is to be enacted, it is earnestly to be hoped that it shall be the Young bill rather than the Spencer bill. Physicians wish the State Department of Health to continue to be a health and not a charity organization. They wish improvement to come about through educational methods. The Young bill would open this opportunity to the State Department of Health.

JAMES S. STONE, *Secretary.*

NOTICES.

SUFFOLK DISTRICT MEDICAL SOCIETY.—At the meeting of the Council of the Massachusetts Medical Society, held on February 4, 1920, it was stated that a number of delegates from different states to the A. M. A. had expressed a wish to have the 1921 meeting held in Boston. The Council voted to extend an invitation to the A. M. A. to meet in Boston in 1921, provided this would be agreeable to members of the Suffolk District Medical Society who, the Council appreciates, must do most of the work connected with this meeting.

A special meeting of the Suffolk District Medical Society is, therefore, called for Wednesday evening, March 10, 1920, at 8.15 p.m., at the Medical Library. It is very desirable that there be a good attendance as the question under discussion is one which will affect practically every member of the Society.

G. G. SEARS, *Vice-President.*
G. G. SMITH, *Secretary.*

NOTICE OF MEETING.—A combined meeting of the New England Roentgen Ray Society and the Boston Orthopedic Club will be held at Ware Hall, Boston Medical Library, Monday evening, March 15, at 7.45 o'clock.

Program: Speaker, Dr. I. Seth Hirsch of New York; subject, Some X-ray Observations on Bone Diseases. Discussion by Dr. Torr Harmer and Dr. E. H. Nichols.

HAMPSHIRE DISTRICT MEDICAL SOCIETY.—Regular meeting at Forbes Library, Northampton, on Wednesday, March 10, 1920, at 11.30 A.M.

Lecturer: Dr. Timothy Leary of Boston.

Dr. Leary is Professor of Pathology and Bacteriology at Tufts College Medical School, and Medical Examiner of Suffolk County, and is an interesting and forceful speaker.

E. E. THOMAS, M.D., *Secretary.*

RECENT DEATH.

DR. STAFFORD BAKER SMITH, a Fellow of the Massachusetts Medical Society, died at Washington, D. C., February 27, 1920, aged 37 years.